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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,079	03/31/2004	Kiwamu Fujimoto	251289US2	5649

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EXAMINER

GOUDREAU, GEORGE A

ART UNIT PAPER NUMBER

1763

DATE MAILED: 06/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,079

Applicant(s)

FUJIMOTO, KIYAMU

Examiner

George A. Goudreau

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on (3-31-04 to 6-25-04).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

George A. Goudreau
GEORGE GOUDREAU
PRIMARY EXAMINER

6-051

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et. al. (5,316,616).

Nakamura et. al. disclose an apparatus for rie etching a wafer (11) on a cathode electrode (15) in a parallel plate etcher. The cathode is equipped with means for electrostatically holding the wafer (11) during the etching process. The wafer is cooled on the cathode to a temperature of 0 C by supplying a cooling liquid at a temperature of – 15 C to the cathode in order to cool the cathode electrode to a temperature of –10 C. He gas is supplied between the backside of the wafer, and the chuck during the etching process in order to improve the heat transfer between the wafer, and the cathode electrode. This is discussed specifically in columns 6-7; and discussed in general in columns 1-16. This is shown specifically in figure 3; and shown in general in figures 1-10.

The wafer recited by applicant in their apparatus claims is not part of their apparatus. Further, the apparatus taught above is inherently capable of processing a wafer of the type, which is specifically claimed by the applicant. The examiner cites the case law listed below of interest to the applicant in this regard.

Furthermore, it is obvious to one skilled in the art that the configuration of the substrate worked upon by the apparatus claimed in this invention is not patentable in

view of In re Young (25 U.S.P.Q. 69, 71 (CCPA 1935)) and In re Rishoi (94 U.S.P.Q. 71,73 (CCPA 1952)). The Court of Customs and Patent Appeals stated in In re Young that inclusion of material worked upon by a machine as element in claim may not lend patentability since claim is not otherwise allowable. Similarly, the Court of Customs and Patent Appeals stated in In re Rishoi that there is no patentable combination between a device and the material upon which it works.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et. al. (6,670,265)

Wang et. al. disclose a process, and apparatus for the anisotropic etching of a low K dielectric, HSQ layer (6), and a TEOS layer (8) using a patterned photo resist etch mask (12), and a plasma, which is comprised of C₄F₈-C₂F₆-Ar. The wafer is supported on an RF biased cathode which is equipped with means for cooling the cathode to a temperature of -10 C while supplying He between the back side of the wafer, and the

chuck used to hold the wafer. An electrostatic chuck (22) is used to hold the wafer during the rie-etching step. This is discussed specifically in columns 3-6; and discussed in general in columns 1-10. This is shown specifically in figures 1, 3; and shown in general in figures 1-7. Wang et. al. fail, however, to specifically disclose the following aspects of applicant's claimed invention:

- the specific etch process parameters which are claimed by the applicant; and
- the specific usage of a photo resist etch mask of the type claimed by the applicant

It would have been prima facie obvious to employ any of a variety of different etch process parameters in the etching process taught above including those which are specifically claimed by the applicant. These are all well-known variables in the plasma etching art, which are known to effect both the rate and the quality of the plasma etching process. Further, the selection of particular values for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific etch process parameters which are claimed by the applicant in the etching process taught above based upon *In re Aller* as cited below.

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process parameters which are claimed by the applicant are results effective variables whose values are known to effect both the rate, and the

quality of the plasma etching process.

It would have been obvious to one skilled in the art to replace the photo resist etch mask employed in the process taught above with the specific type of photo resist etch mask which is claimed by the applicant based upon the following. The usage of the specific type of photo resist etch mask, which is claimed by the applicant is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for supplying a photo resist etch mask during the etching process, which is taught above to the specific means, which is taught above.

6. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference as applied in paragraph 5 above further in view of Tsutsumi et. al. (JP 2002-145,955).

The reference as applied in paragraph 5 above fail to disclose the following aspects of applicant's claimed invention:

- the specific usage of a photo resist etch mask of the type claimed by the applicant


Tsutsumi et. al. teach that it is desirable to employ a photo resist etch mask which is comprise of a methacrylate polymer with alicyclic groups due to the improved etch resistance of the etch mask during an etching process. This is discussed specifically in the abstract; and discussed in general in columns 1-26.

It would have been obvious to one skilled in the art to replace the photo resist etch mask employed in the process taught above with the specific type of photo resist etch mask which is claimed by the applicant based upon the teachings of Tsutsumi et. al. that it is desirable to employ such a photo resist etch mask during an etching process due to the increased etch resistance of the photo resist etching mask during the etching process.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication should be directed to examiner

George A. Goudreau at telephone number (571)-272-1434.


George A. Goudreau
Primary Examiner
Art Unit 1763